

## WHAT IS CLAIMED IS:

## 1. A light source device comprising:

a concave reflector having an open front end section;  
a light source having a light emitting unit, the unit being positioned on a focal point of the reflector;

a cover attached to the open front end section of the reflector to cover the open front end section, the cover having an air inflow opening provided at a side section thereof in relation to the open front end section, at least a part of the cover being made of a transparent material, the part being a light passage through which light emitted by the light source and reflected by the reflector passes;

a fan having an air outflow opening, the fan being provided so that airflow created by the fan and blown through the air outflow opening is directed to the air inflow opening of the cover, without obstructing the light passing through the light passage; and

an air control unit provided between the air outflow opening of the fan and the air inflow opening of the cover, the air control unit controlling the airflow blown through the air outflow opening of the fan so that the airflow blown through the air outflow opening is flown into the reflector through the air inflow opening of the cover and directed at least to one specific section of the light source, thus cooling the specific section.

2. The light source device according to claim 1, wherein the light source has a first and a second sealing section sealing electrodes on both ends of the light source, the light emitting unit being interposed between the first and second sealing sections, the first sealing section being closer to the open front end section of the reflector than the second sealing section being, the specific section of the light source to be cooled being the first sealing section.

3. The light source device according to claim 1, wherein a direction of the airflow blown through the air outflow opening of the fan is opposed to a direction of the light passing through the light passage.

4. The light source device according to claim 1, wherein the airflow blown through the air inflow opening of the cover to the specific section of the light source is almost parallel to an imaginary straight line connected between the air inflow opening and the specific section in the reflector, except in the vicinity of the air inflow opening and the specific section.

5. The light source device according to claim 2, wherein the reflector has an air outflow opening positioned as opposed to the open front end section of the reflector, the air outflow opening of the reflector being closer to the second sealing section of the light source than to the first sealing section, a part of the airflow directed to the specific section of the light source hitting an inner surface of the concave reflector and swirling along the inner surface, the swirling airflow cooling the second sealing section of the light source and being discharged through the air outflow opening of the reflector.

6. The light source device according to claim 1, wherein the air control unit has at least one air control plate to provide two or more of air ducts in the air control unit, the airflow created by the fan being flown into the reflector through the air outflow opening of the fan, the air ducts and the air inflow opening of the cover.

7. The light source device according to claim 6, wherein the air control plate controls the airflow flowing through the air ducts so that the airflow directed to the specific

section of the light source exhibits a higher wind velocity than airflow directed to other sections of the light source.

8. The light source device according to claim 7, wherein the light source has a first and a second sealing section sealing electrodes on both ends of the light source, the light emitting unit being interposed between the first and second sealing sections, the first sealing section being closer to the open front end section of the reflector than the second sealing section being, the specific section of the light source to be cooled by the airflow, that is controlled by the air control plate while passing through the air ducts and is directed thereto, being the first sealing section.

9. The light source device according to claim 7, wherein the air control plate controls the airflow flowing through the air ducts so that the airflow blown through the air inflow opening of the cover to the specific section of the light source is almost parallel to an imaginary straight line connected between the air inflow opening and the specific section in the reflector, except in the vicinity of the air inflow opening and the specific section.

10. The light source device according to claim 8, wherein the reflector has an air outflow opening positioned as opposed to the open front end section of the reflector, the air outflow opening of the reflector being closer to the second sealing section of the light source than to the first sealing section, the air control plate controlling the airflow flowing through the air ducts so that a part of the airflow directed to the specific section of the light source hits an inner surface of the concave reflector and swirls along the inner surface, the swirling airflow cooling the second sealing section of the light source and being discharged through the air outflow opening of the reflector.